

PATENT ABSTRACTS OF JAPAN

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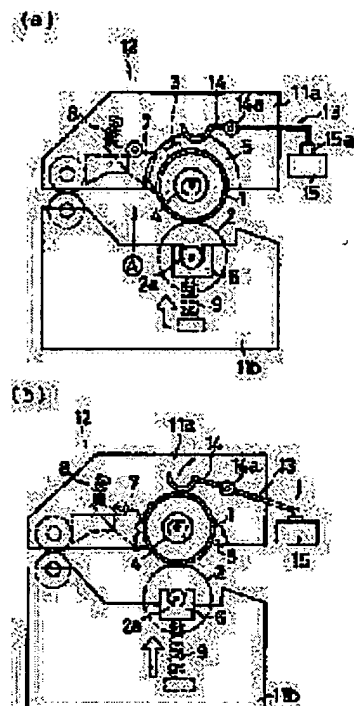
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(54) FIXING DEVICE AND FACSIMILE DEVICE PROVIDED WITH THE SAME

(57)Abstract:

PURPOSE: To perfectly interrupt energizing with respect to a heater and to transmit the occurrence of abnormality and failure of a fixing device by turning off the power supply of the heater in a state where a switching means engaged with a fixing roller bearing is in an off-condition.

CONSTITUTION: The switching means 13 is constituted of a switch arm 14 and a switch 15. One end side of the arm 14 is engaged with the external circumference of the fixing roller 1 shaft, and the other end side abuts on the switch button 15a of the switch 15. When abnormality occurs in a thermistor 3, so that the fixing roller 1 is abnormally heated by the heater 4 and a fixing roller bearing 5 supporting the fixing roller 1 starts melting by a high temperature, and the roller 1 is pushed upward by the pressure of a pressuring spring 9 pressuring a pressuring roller 2. The external circumference of the roller 1 pushes one end side of the arm 14 upward while having a supporting shaft 14a as the fulcrum, and the other end side pushes the button 15 downward so as to turn the switch 15 off. Thus, the power supply for the heater 4 is interrupted.



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CLAIMS

[Claim(s)]

[Claim 1] An anchorage device characterized by having a switching means which turns on and off a supply power supply of said heating means while engaging with fixing roller bearing which supports said fixing roller, and this fixing roller bearing in an anchorage device which conveys the recording paper and is established in a toner image in the record paper between a fixing roller which carries out the internal organs of the heating means, a pressurization roller which carries out a pressure welding to said fixing roller, and said fixing roller and said pressurization roller.

[Claim 2] An anchorage device according to claim 1 characterized by unifying said fixing roller bearing and said switching means.

[Claim 3] The anchorage device characterized by to have the switching means which turns on and off the supply power supply of said heating means while having engaged with the separation pawl a pawl separates the recording paper arranged on said fixing roller in an anchorage device which conveys the recording paper and is established in a toner image in the record paper between a fixing roller which carries out the internal organs of the heating means, a pressurization roller which carries out a pressure welding to said fixing roller, and said fixing roller and said pressurization roller, and this separation pawl.

[Claim 4] An anchorage device which conveys the recording paper and is established in a toner image in the record paper between a fixing roller which carries out the internal organs of the heating means characterized by providing the following, a pressurization roller which carries out a pressure welding to said fixing roller, and said fixing roller and said pressurization roller Fixing roller bearing which supports said fixing roller A switching means which turns on and off a supply power supply of said heating means while engaging with this bearing A control section which carries out call origination of the predetermined message to the appointed phase hand while intercepting a supply power supply of said heating means, when this switching means turns off

[Claim 5] An anchorage device which conveys the recording paper and is established in a toner image in the record paper between a fixing roller which carries out the internal organs of the heating means characterized by providing the following, a pressurization roller which carries out a pressure welding to said fixing roller, and said fixing roller and said pressurization roller Fixing roller bearing which supports said fixing roller A switching means which turns on and off a supply power supply of said heating means while engaging with this bearing A control section which reports an alarm while intercepting a supply power supply of said heating means, when this switching means turns off

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] The invention in this application relates to facsimile apparatus equipped with the anchorage device and it which are made to convey the recording paper between a fixing roller and a pressurization roller, and carry out heat fixing of the toner image in the record paper.

[0002]

[Description of the Prior Art] Drawing 9 shows the outline block diagram of an anchorage device 12. The thermistor 3 is contacted by the peripheral face while a fixing roller 1 carries out the internal organs of the heating means of heater 4 grade. Moreover, the fixing roller bearing 5 which carries out rotation support of this fixing roller 1 is formed in the both-ends peripheral surface of a fixing roller 1. This fixing roller bearing 5 is being fixed to frame when it is in both sides 11a. Silicone rubber etc. is covered by the peripheral face and the pressure welding of the pressurization roller 2 is carried out to the fixing roller 1. Moreover, the pressurization roller bearing 6 which supports the both ends of shaft 2a of the pressurization roller 2 is formed in the both sides of bottom frame 11b possible [vertical sliding], and is always pushed in the fixing roller 1 direction with the pressurization spring 9. The recording paper P with which the toner image was imprinted from imprint equipment 12 is pinched and heated between a fixing roller 1 and the pressurization roller 2, dissolves the toner image on the recording paper P, and is established. The recording paper P established in the toner image is removed from a fixing roller 1 by the separation pawl 7, and is discharged by the delivery koro 10. Moreover, in order to carry out heating control of the skin temperature of a fixing roller 1 at the temperature which can be established, it is controlling by temperature detection of said thermistor 3 which is in contact with the surface of a fixing roller 1.

[0003]

[Problem(s) to be Solved by the Invention] By the way, since the temperature of a fixing roller 1 which can be established was controlled by detection temperature of a thermistor 3, when failure arose in the thermistor 3, the skin temperature of a fixing roller 1 did not reach predetermined temperature, or it had the case which became an abnormality elevated temperature on the contrary where it carried out. Moreover, when the heater control section the heater is carrying out [the control section] energization control overran recklessly, the skin temperature of a fixing roller 1 became an abnormality elevated temperature, and there was a problem that failure and failure of each part of an anchorage device 12 arose at the temperature. In such a case, he forms a thermostat in the surface of a fixing roller 1, and was trying to intercept the energization to a heater 4 temporarily at the time of an abnormality elevated temperature. However, since an energization condition was not completely made to **, there was a problem on which a heater is heated again after a temperature reduction.

[0004] This invention aims at offering facsimile apparatus equipped with the anchorage device which tells the abnormalities of equipment, and the purport of a failure while it makes the energization to a heater intercept completely, when abnormalities and a failure arise in the heater control which carries out internal organs to a fixing roller.

[0005]

[Means for Solving the Problem] Therefore, while engaging with fixing roller bearing which supports a fixing roller, and this fixing roller bearing according to invention concerning above-mentioned claim 1, it is characterized by having a switching means which turns on and off a supply power supply of said heating means.

[0006] Moreover, according to invention concerning claim 2, it is characterized by unifying fixing roller bearing and said switching means.

[0007] Moreover, while engaging with a separation pawl which separates the recording paper arranged on a fixing roller, and this separation pawl according to invention concerning claim 3, it is characterized by having a switching

means which turns on and off a supply power supply of said heating means.

[0008] Moreover, it is characterized by having a switching means which turns on and off a supply power supply of said heating means while engaging with fixing roller bearing which supports a fixing roller, and this bearing according to invention concerning claim 4, and a control section which carries out call origination of the predetermined message to the appointed phase hand while intercepting a supply power supply of said heating means, when this switching means turns off.

[0009] Moreover, it is characterized by having a switching means which turns on and off a supply power supply of said heating means while engaging with fixing roller bearing which supports a fixing roller, and this bearing according to invention concerning claim 5, and a control section which reports an alarm while intercepting a supply power-supply of said heating means, when this switching means turns off.

[0010]

[Function] Since it was made to make the supply power supply of a heating means turn on and off according to the configuration according to claim 1 while making the switching means engage with fixing roller bearing, when said fixing roller bearing dissolves and deforms with the heat of an abnormality elevated temperature of a fixing roller, it changes to an OFF state from ON, and the switching means which engaged with the fixing roller can intercept completely the energization of a heating means which is carrying out internal organs to the fixing roller by it, and can cut it off. Therefore, a heating condition can be stopped completely and reheating can be made to prevent.

[0011] Moreover, according to the configuration according to claim 2, by unifying fixing roller bearing and a switching means, prevention of un-operating [of the switching means by heat deformation of said fixing roller bearing] or malfunction can be performed, and actuation of the stable switching means is obtained. Moreover, the precision of the physical relationship of fixing roller bearing and a switching means can be taken out easily.

[0012] Moreover, since it was made to make the supply power supply of said heating means turn on and off according to the configuration according to claim 3 while engaging the switching means with the separation pawl, when a separation pawl dissolves and deforms with the heat of an abnormality elevated temperature of a fixing roller, it changes to an OFF state from ON, and the switching means which engaged with the separation pawl can intercept completely the energization of a heating means which is carrying out internal organs to the fixing roller by it, and can cut it off. Therefore, a heating condition can be stopped completely and reheating can be made to prevent.

[0013] Moreover, since it was made to carry out to the appointed phase hand call origination of the predetermined message while intercepting the supply power supply of said heating means according to the configuration according to claim 4, when a switching means turned off, at the time of the abnormalities of an anchorage device, or a failure, abnormalities and a failure can be quickly notified to the location in which whose people are always in the location on which facsimile apparatus is put, and people are it present that there is nothing. Therefore, the correspondence at the time of abnormalities or a failure can be taken quickly.

[0014] Moreover, since the alarm was reported while intercepting the supply power supply of said heating means according to the configuration according to claim 5, when a switching means turned off, at the time of the abnormalities of facsimile apparatus, or a failure, an alarm can be emitted from the main part of equipment, and those who are present in those who are present in near, or the next room can be told quickly. Therefore, the correspondence at the time of abnormalities or a failure can be taken quickly.

[0015]

[Example] Hereafter, the example of this invention is explained to details with reference to a drawing. In addition, the same sign is attached to the same member as the member in the conventional configuration shown in drawing 9 , and detailed explanation is omitted.

[0016] Drawing 1 is the block diagram of the anchorage device concerning the 1st example of this invention. In drawing 1 (a), the switching means 13 consists of a switch arm 14 and a switch 15. The switch arm 14 was constituted so that it might rotate focusing on pivot 14a currently fixed to frame 11a, the end side of this switch arm 14 engaged with the periphery of a fixing roller shaft, and the other end side is in contact with switch carbon button 15a of a switch 15. when abnormalities arise in a thermistor 3 with such a configuration and abnormality heating of the fixing roller 1 is carried out at a heater 4, as shown in drawing 1 (b), the fixing roller bearing 5 which is supporting the fixing roller 1 is **** by high temperature -- ** and a fixing roller 1 are pushed up upward by the pressure of the pressurization spring 9 which the pressurization roller 2 energizes. At this time, the periphery of a fixing roller 1 pushes up pivot 14a for the end side of the switch arm 14 as the supporting point, and that other end side depresses the switch carbon button 15, and turns OFF a switch 15. The supply power supply of a heater 4 is intercepted by turning off this switch 15. Thus, in turning off a supply power supply completely, damage on the anchorage device 12 by abnormality heating can be made into the minimum. In addition, a switch 15 is connected with the supply power supply of a heater 4, and at the time, energization

at a heater 4 usually becomes possible off so that a switch may intercept energization of a heater to ON at the time of abnormalities or a failure. Moreover, the switch 15 has the function of interlocking so that it may not return, once it is pushed.

[0017] Drawing 2 is the block diagram of the anchorage device concerning the 2nd example of this invention. In drawing 2 (a), the switching means 17 is really constituted from a switch 18 and the bearing 19 which supports a fixing roller 1 by shaping. This switching means 17 is supported so that the both ends of a fixing roller 1 may be covered from the upper part, and it is being fixed to frame 11a. A switch 18 is the form where switch carbon button 18a is turned to bearing 19, and is located in the upper part of this bearing 19. This switch 18 has the function of interlocking so that it may not return, once it is pushed. When abnormalities arise in a thermistor 3 with such a configuration and abnormality heating of the fixing roller 1 is carried out at a heater 4, as shown in drawing 2 (b), the bearing 19 which is supporting the fixing roller 1 ***** according to high temperature, and a fixing roller 1 is pushed up upward by the pressure of the pressurization spring 9 which the pressurization roller 2 energizes. At this time, the periphery of a fixing roller 1 pushes up switch carbon button 18a, and turns OFF a switch 18. When this switch 18 turns off, the supply power supply of a heater 4 is intercepted. Thus, in turning off a supply power supply completely, damage on the anchorage device 12 by abnormality heating can be made into the minimum. In addition, a switch 18 is connected with the supply power supply of a heater 4, and at the time, energization at a heater 4 usually becomes possible off so that a switch may intercept energization of a heater to ON at the time of abnormalities or a failure.

[0018] Drawing 3 is really concerning the 2nd example of this invention the block diagram of a formal switching means. As shown in drawing, the switching means 17 is carrying out unification shaping of the bearing 19 which supports a fixing roller 1, and the switch 18 by resin. Moreover, bearing 19 was formed by resin and a switch 18 is formed with a metal. Moreover, this switch 18 is connected to the supply power supply of a heater 4.

[0019] Drawing 4 is the block diagram of the anchorage device concerning the 3rd example of this invention. In drawing 4 (a), the switching means 13 consists of a switch arm 16 and a switch 15. The switch arm 16 was constituted so that it might rotate focusing on pivot 16a fixed to frame 11a which is not illustrated, the end side of this switch arm 16 engaged with a part of separation pawl, and the other end side is in contact with switch carbon button 15a of a switch 15. when abnormalities arise in a thermistor 3 with such a configuration and abnormality heating of the fixing roller 1 is carried out at a heater 4, as shown in drawing 4 (b), the separation pawl 7 which is in contact with the fixing roller is **** by high temperature -- ** and the separation pawl 7 are further forced on a fixing roller 1 side by compression Spring-8 which energizes this separation pawl 7 in the fixing roller 1 direction. It rotates so that a part of separation pawl which is engaging with the switch arm 16 at this time may go up upward by using as the supporting point separation claw-axis 7a currently supported by frame 11a (refer to drawing 1), and pivot 16a is pushed up as the supporting point, and the end side of the switch arm 16 is rotated. An other end side depresses the switch carbon button 15, and makes a switch 15 turn off in connection with it. When this switch 15 turns off, the supply power supply of a heater 4 is intercepted. Thus, in turning off a supply power supply completely, damage on the anchorage device by abnormality heating can be made into the minimum. In addition, a switch 15 is connected with the supply power supply of a heater 4, and at the time, energization at a heater 4 usually becomes possible off so that a switch may intercept energization of a heater to ON at the time of abnormalities.

[0020] Drawing 5 shows the electrical circuit of the anchorage device concerning the 1-3rd examples of this invention. A thermistor 3 contacts the peripheral surface of a fixing roller 1, the skin temperature is detected, the internal organs of the heater 4 are carried out to the fixing roller 1, and it heats this fixing roller 1 from the interior. It connects with the supply power supply 20, and switching means 13 and 17 perform connectionless [of a supply power supply / connection or connectionless] to a heater 4 by the switching. The peripheral surface of a fixing roller 1 is equipped with a thermostat 21, and it is between the single tracks of a heater 4 and the supply power supply 20, and cuts energization temporarily at the time of the abnormality elevated temperature of a fixing roller 1. The heater controller 22 is between the single tracks of a heater 4 and a thermostat 21, and is performing energization or un-energizing to the heater 4. It connects with a thermistor 3 and the heater controller 22, and the heater control circuit 23 is carrying out motion control of the heater controller 22 based on the temperature which a thermistor 3 detects.

[0021] Drawing 6 shows the block block diagram of facsimile apparatus equipped with the anchorage device concerning the 4-5th examples of this invention. In drawing, an alarm 26 is emitted at the time of the abnormalities of an anchorage device 12, or a failure, and carries out energization control of the warning circuit 27 at an alarm. The switch detecting circuit 28 is supervising the on-off condition of switches 15 and 18, and the fixing section 29 controls by supervising the temperature of an anchorage device 12 which can be established. Moreover, it connects with the telephone line and transmitting and receiving the various procedure signals for drawing information or transmission control, in order that a modem 30 may enable communication with the exterior, a network control unit 31 performs predetermined line control

at the time of sending and receiving. The manuscript read station 32 reads a manuscript image, and the record output section 33 carries out the record output of the drawing information which received [which received and record-outputted] the manuscript image read by said manuscript read station 32. While the coding decryption section 34 carries out the data compression of the drawing information to transmit, it decrypts the received drawing information and restores it to the drawing information on original. An image memory 35 accumulates receiving drawing information the drawing information on a transmitting manuscript, or if needed. The actuation display 36 displays the operating state of equipment etc. while an operator performs various actuation. A system memory 37 stores the information registered beforehand and the information temporarily held at the time of communication link actuation. The system control section 38 is a microcomputer which controls each part of the above, and a system bus 39 is a signal line with which each part of the above exchanges various control signals and data mutually.

[0022] As shown in drawing 7 , by the above configuration, in the 4th example of this invention the failure notification processing A of an anchorage device 12 The switching means 13 and 17 turned on at the time usually, according to the abnormal temperature condition of a fixing roller 1 It judges whether the supply power supply of the heater 4 which is a heating means is turned off (processing 101). When switching means 13 and 17 do not turn off, (N of processing 101), If it continues supervising OFF and switching means 13 and 17 turn off (Y of processing 101) Based on the condition signal, the communications control of facsimile apparatus is started (processing 102), the appointed destination and a predetermined message are read from a system memory 37 (processing 103), the appointed phase hand telephone number is inputted (processing 104), and call origination actuation is performed (processing 105). Then, it judges whether a message was received on the phase hand (processing 106), and this processing will be finished if a message is received (Y of processing 106). If a message is not received (N of processing 106), return recurrence call actuation is carried out to call origination actuation of processing 105.

[0023] As mentioned above, since the facsimile apparatus carries out call origination of the message of the purport which the failure generated to the appointed phase hand when abnormalities and a failure arise in the anchorage device 12 of facsimile apparatus, even if equipment is installed in the room of Nighttime or an uninhabited condition, it can take in correspondence of a failure quickly.

[0024] As shown in drawing 8 , in the 5th example of this invention moreover, the failure notification processing B of an anchorage device The switching means 13 and 17 turned on at the time usually, according to the abnormal temperature condition of a fixing roller 1 It judges whether the supply power supply of the heater 4 which is a heating means is turned off (processing 201). When switching means 13 and 17 do not turn off, (N of processing 201), If it continues supervising OFF and switching means 13 and 17 turn off (Y of processing 201), based on the condition the alarm with which a warning circuit is operated and facsimile apparatus is equipped will be started (processing 202). Then, whether the information of an alarm was called off judges (processing 203), and this processing will be finished if canceled (Y of processing 203). Moreover, if not canceled (N of processing 203), supervising information discharge is continued.

[0025] As mentioned above, when a failure arises in the anchorage device 12 of facsimile apparatus, since the facsimile apparatus sounds an alarm, even if it is in a location or the next room distant from facsimile apparatus, correspondence of a failure can be taken quickly. In addition, the phase hands of the above-mentioned assignment may be a home, a defense room, a service company, a security company, a device centralized control room, a branch, etc. Moreover, it does not restrict to this etc.

[0026]

[Effect of the Invention] According to invention concerning said claim 1, by making a switching means engage with fixing roller bearing, and having shut off the supply power supply of a heater by the OFF state of the switching means, energization of a heater can be intercepted completely and can be cut off by stopping immediately the heat of an abnormality elevated temperature which dissolves fixing roller bearing, and making the supply power supply of a heater turn off. Therefore, an abnormality heating condition can be stopped completely, prevention of reheating and instant descent of further an abnormality elevated temperature can be aimed at, and safety can be raised.

[0027] Moreover, according to invention concerning claim 2, in addition to an effect according to claim 1, prevention of un-operating [of the switching means by heat deformation of fixing roller bearing] or malfunction can be aimed at by unifying fixing roller bearing and a switching means. Moreover, improvement in the stability of a switching means and reliability can be aimed at.

[0028] Moreover, according to invention concerning claim 3, by making a switching means engage with a separation pawl, and having shut off the supply power supply of a heater by the OFF state of the switching means, energization of a heater can be intercepted completely and can be cut off by stopping immediately the heat of an abnormality elevated temperature which dissolves a separation pawl, and making the supply power supply of a heater turn off. Therefore, an

abnormality heating condition can be stopped completely, prevention of reheating and instant descent of further an abnormality elevated temperature can be aimed at, and safety can be raised.

[0029] Moreover, when a switching means turns off, while intercepting the supply power supply of a heater according to invention concerning claim 4 Even if people are not always in the location on which facsimile apparatus is put at the time of the failure of an anchorage device by having been made to carry out call origination of the predetermined message to the appointed phase hand, and even if it is night, the locations (defense room etc.) in which people are present, or a service company can be quickly notified of a failure. Therefore, the correspondence at the time of a failure can be taken quickly.

[0030] Moreover, since the alarm was reported while intercepting the supply power supply of a heater according to invention concerning claim 5, when a switching means turned off, at the time of the failure of facsimile apparatus, an alarm can be emitted from the main part of equipment, and those who are present in those who are present in near, or the next room can be told quickly. Therefore, the correspondence at the time of a failure can be taken quickly.

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* NOTICES *

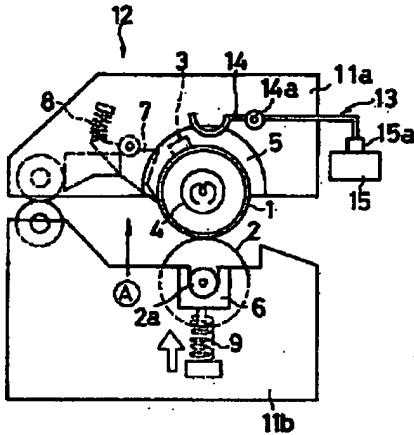
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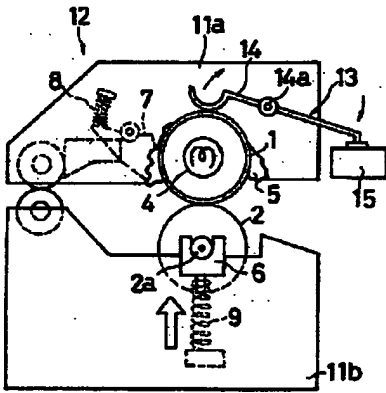
DRAWINGS

[Drawing 1]

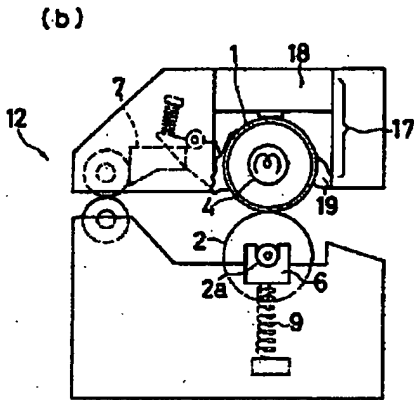
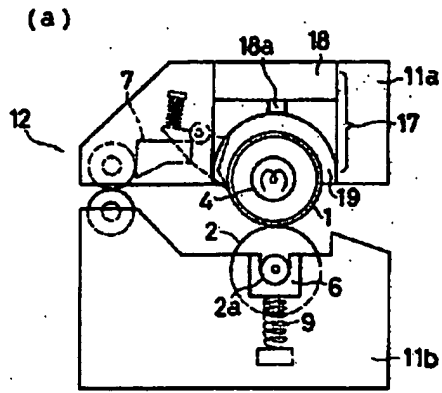
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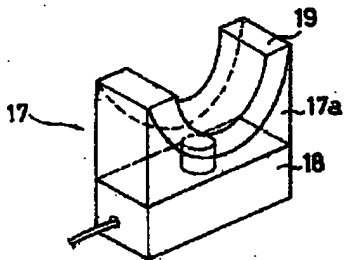
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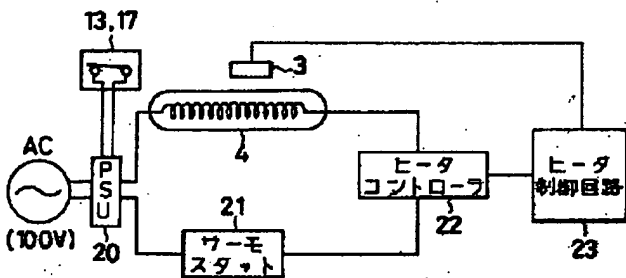
[Drawing 2]



[Drawing 3]

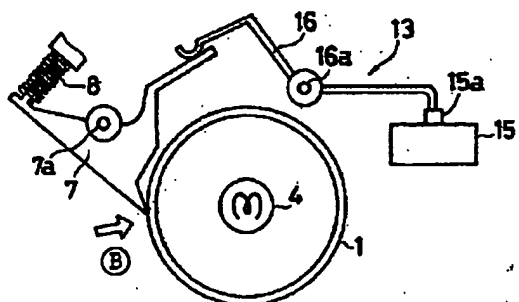


[Drawing 5]

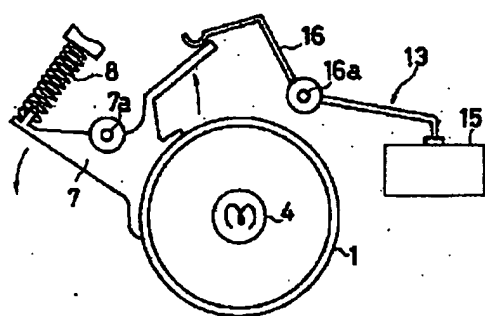


[Drawing 4]

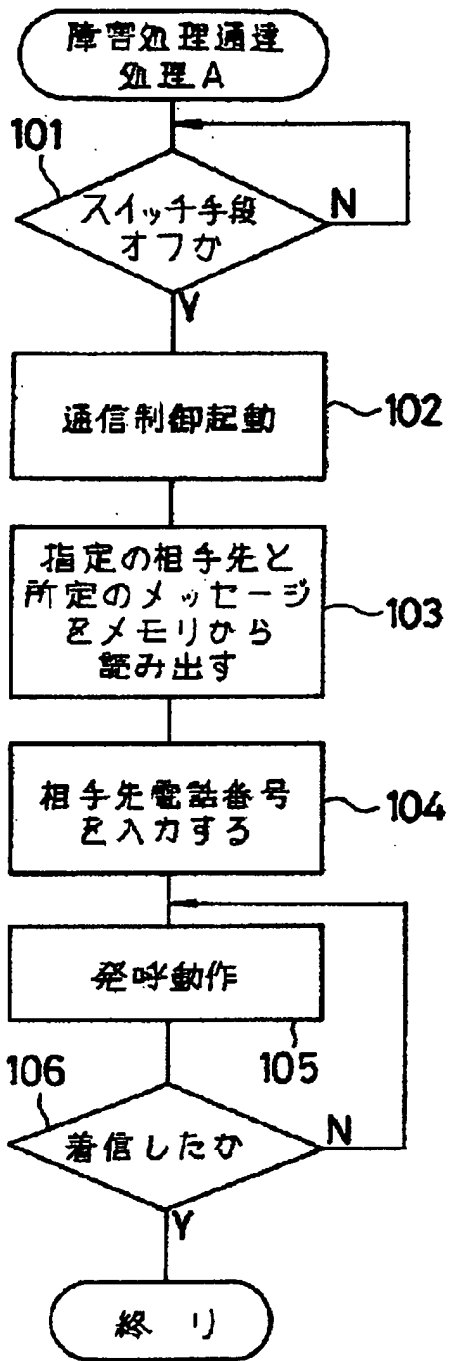
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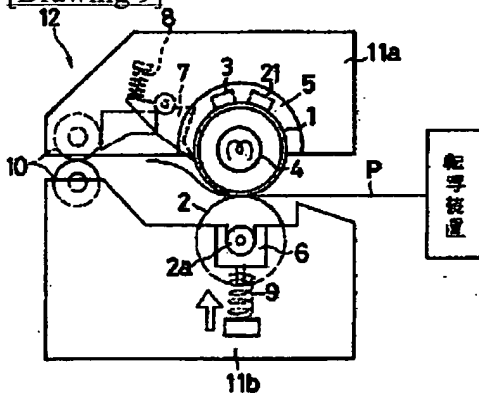
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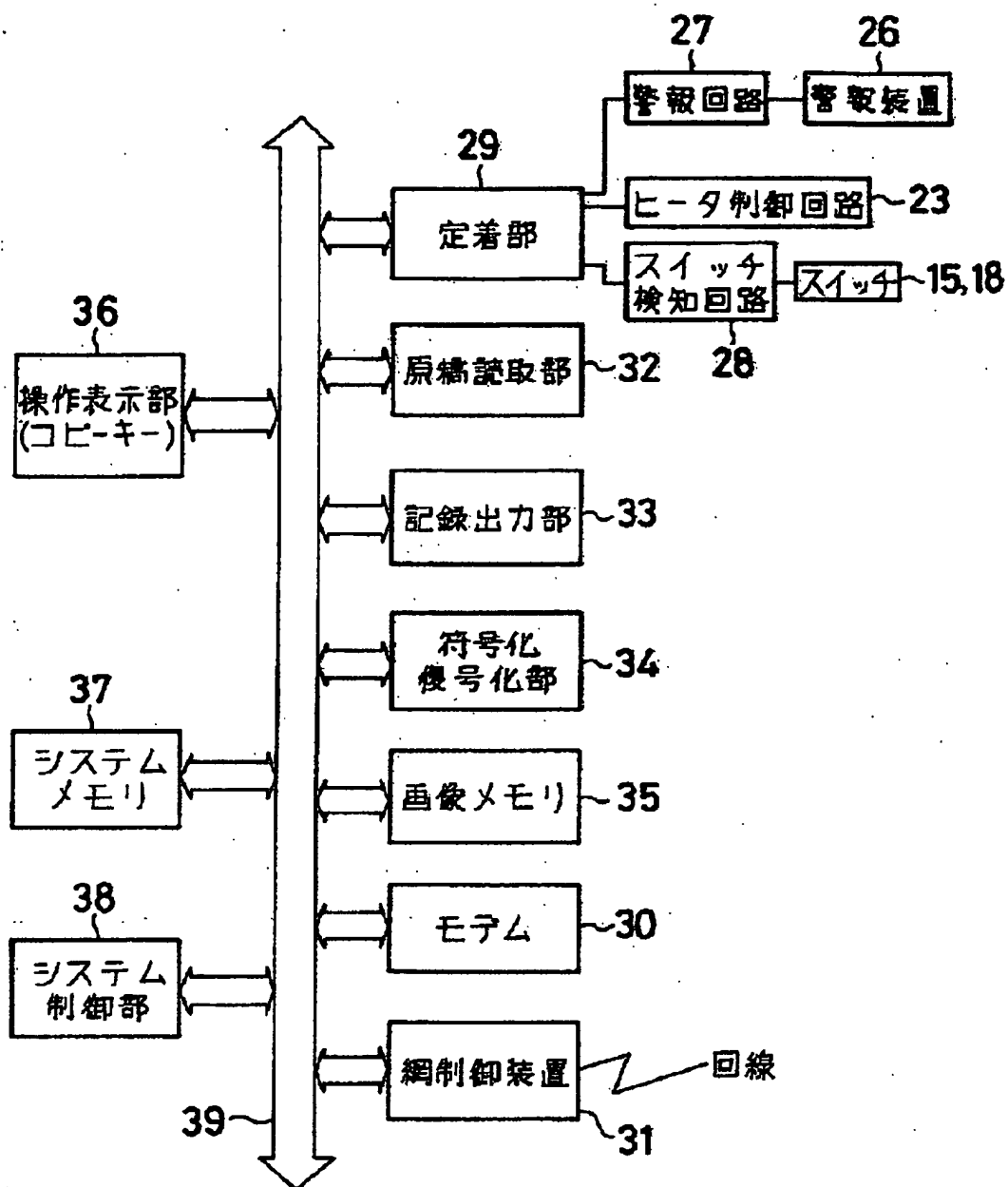
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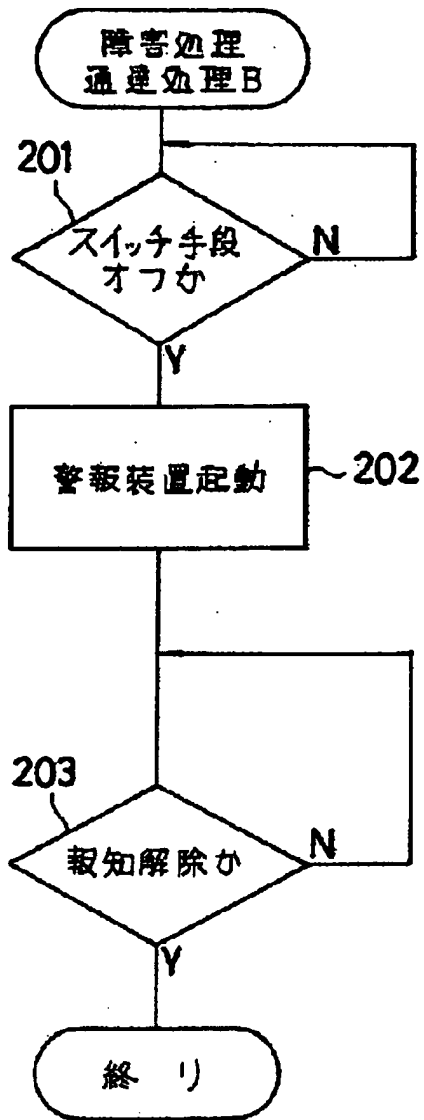
[Drawing 9]



[Drawing 6]



[Drawing 8]



[Translation done.]